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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,078	01/10/2001	David C. Brown	OSPD91-US	7128

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EXAMINER

PEREZ, GUILLERMO

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 11/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/758,078

Applicant(s)

BROWN, DAVID C.

Examiner

Guillermo Perez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plesko (U. S. Pat. 5,596,442) in view of Stangeland (U. S. Pat. 5,112,146).

Plesko substantially teaches the claimed invention except that it does not show that the shaft and the bearing support structure having the same coefficient of thermal expansion as the ceramic bearing assemblies. Plesko does not disclose that the ceramic bearing assemblies comprising a ceramic inner race, ceramic bearing balls, and a ceramic outer race.

Stangeland discloses that the shaft (32) and the bearing support structure (34) having the same coefficient of thermal expansion as the ceramic bearing assemblies (column 2, lines 5-9). Stangeland discloses that the ceramic bearing assemblies comprising a ceramic inner race (12), ceramic bearing balls (20 and column 1, lines 29-32), and a ceramic outer race (16). Stangeland's invention has the purpose of improving bearing longevity and wear resistance.

It would have been obvious at the time the invention was made to modify the torque motor of Plesko and provide it with the shaft, bearing support structure, and

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ceramic bearing assemblies configuration disclosed by Stangeland for the purpose of improving bearing longevity and wear resistance.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the shaft and the bearing support structure of a nickel-iron alloy since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

2. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plesko in view of Stangeland as applied to claims 5-7 above, and further in view of M. V. Braunagel (U. S. Pat. 3,178,241).

Plesko and Stangeland disclose a torque motor as described on item 1 above. However, neither Plesko nor Stangeland disclose that the shaft being electrically isolated from the bearing support structure.

Braunagel discloses that the shaft being electrically isolated from the bearing support structure (column 3, lines 43-49). Braunagel's invention has the purpose of enabling the operation even with a large electrical potential difference between the drive shaft and the housing.

It would have been obvious at the time the invention was made to modify the torque motor of Plesko and Stangeland and provide it with the electrically isolated shaft for the purpose of enable the operation with a large electrical potential difference between the drive shaft and the housing.

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3. Claims 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plesko in view of M. V. Braunagel and further in view of Stangeland.

Plesko substantially teaches the claimed invention except that it does not show that the bearing assembly is all ceramic. Plesko does not disclose that the shaft, the bearing support structure and the all ceramic bearing assembly have a substantially similar coefficient of thermal expansion. Plesko does not disclose that the all ceramic bearing assembly comprises a ceramic inner race and a ceramic outer race and multiple ceramic bearing balls interspersed there between. Plesko does not disclose that the shaft and the bearing support structure are fabricated of a nickel-iron alloy having a substantially similar coefficient of thermal expansion to the all ceramic bearing assembly. Plesko does not disclose that the shaft is electrically isolated from the bearing support structure.

M. V. Braunagel discloses that the bearing assembly is all ceramic (column 1, lines 55-68). M. V. Braunagel discloses that the all ceramic bearing assembly comprises a ceramic inner race (10) and a ceramic outer race (12) and multiple ceramic bearing balls (13) interspersed there between. M. V. Braunagel discloses that the shaft is electrically isolated from the bearing support structure (column 3, lines 43-49). M. V. Braunagel's invention has the purpose of bearing heavy loads without undue wear, seizing, or other injury thereto.

Stangeland discloses that the shaft (32), the bearing support structure (34) and the ceramic bearing assembly (10) have a substantially similar coefficient of thermal

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expansion (column 2, lines 5-9). Stangeland's invention has the purpose of improving longevity and wear resistance.

It would have been obvious at the time the invention was made to modify the Plesko machine and provide it with the bearing assembly configuration disclosed by M. V. Braunagel and Stangeland for the purpose of bearing heavy loads without undue wear, seizing, or other injury thereto, thus improving longevity.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the shaft and the bearing support structure of a nickel-iron alloy since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Response to Arguments

Applicant's arguments filed August 19, 2002 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the feature upon which applicant relies (i.e., "all ceramic components" emphasis added) is not recited in claims 5-11. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to Applicant's remark that Plesko does not teach bearings, it must be noted that Plesko teaches in column 8, lines 30-35 that the bearings are provided to *"prevent motion in any of the axes previously described, thereby allowing only rotational movement about axis 19 in the direction of dual arrow 21"*. Plesko is clearly teaching the purpose and use of bearings in the embodiment.

Also, in column 8, lines 36-41 Plesko discloses that *"Torque forces in the device shown in FIG. 13 are again illustrated in FIG. 14. The gap 79 of ring 77 cooperates with coil 81 to produce a torque about the Z axis 19. As current I in coil 81 is an alternating current, movement in the direction of arrow 21 is in both clockwise and counterclockwise directions about axis 19. A different embodiment is shown in FIG. 15 when it is necessary to increase the torque and damper resonant frequencies"*. A person of ordinary skill in the art will recognize that the continuously reciprocating movement being performed in a rotating machine as in Plesko will inevitably involve friction forces and wear in the bearings, which will result in failure or a specific preventive maintenance schedule. This problem is being recognized and addressed by M. V. Braunagel and Stangeland.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Applicant points out that neither Stangeland nor Braunagel are not directed to precision, partial rotation torque motors, as in galvanometers however, it must be noted that Stangeland and Braunagel are suggesting their embodiments to increase wear resistance. By increasing wear resistance, Stangeland and Braunagel increase the unbalance resistance in rotation brought by an increase in the spacing between the ball and the races. A person of ordinary skill in the art would recognize that preventing an increase in the spacing between the ball and the races will prevent a decay in the precision of rotation of the machine.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.


Guillermo Perez
October 30, 2002

Guillermo Perez
October 30, 2002